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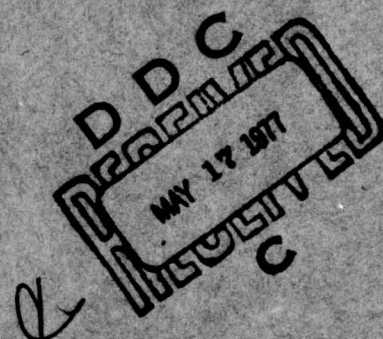
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ONE-SIZE SLUSH-MOLDED POLYVINYL CHLORIDE COVER
FOR THE NAVY MALE SERVICE COMBINATION CAP FRAME
(INTERIM REPORT)

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NAVY CLOTHING AND TEXTILE RESEARCH FACILITY
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TABLE OF CONTENTS

| | <u>Page</u> |
|---------------------------------|-------------|
| Introduction..... | 1 |
| Discussion..... | 2 |
| Conclusion..... | 2 |
| Appendix A. Test Results (in %) | A-1 |

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ONE-SIZE SLUSH-MOLDED POLYVINYL CHLORIDE COVER
for the
NAVY MALE COMBINATION CAP FRAME (INTERIM REPORT)

INTRODUCTION

The Navy Clothing and Textile Research Facility (NCTRF) has developed a slush-molded, stretchable, one-size, plastic white cap cover to fit the standard Navy male service combination cap frame. The item is being service tested. This item, if found to be satisfactory, will replace the standard white all-cotton cap covers which are procured and stocked in 13 sizes. This investigation was initiated as an in-house study to develop suitable substitute materials for use in the manufacture of a cap cover for the male's service combination cap frame.

Plastic white covers are being considered as a suitable replacement material for the white 100% cotton covers, because they readily resist soiling, are rainproof, and still provide an attractive military appearance to the wearer. Should the plastic cover become discolored or soiled, it can be readily and adequately cleaned while still on the service combination cap frame, unlike the cotton cap cover which must be removed. A cleaning cloth dampened in water will suffice for cleaning most plastic surfaces. The use of a plastic material for cap covers, whether fabricated by a cut, sewn and stitching process or a one-piece molded process, will save monies in maintenance and purchase of additional cap covers for the individual.

Slush-molding is being considered since it reproduces a mirror-image of the fabricated, textured material surfaces, seams and sewing stitches and other essential and decoration design elements of a fabricated article in a single, one-piece, molded product. In addition, this molding technique provides the end item with elastomeric and flexibility properties. The plastic resin for molding consists of a polyvinyl chloride plastisols compound and pigments to provide the desired molding and physical characteristics.

In-house experimentation of a size 7 slush-molded cap cover reveals its potential to adequately fit the 13 sizes of the standard Navy male service combination cap frame worn by Naval personnel. Field tests indicated, however, that possibly two sizes will accommodate the entire head-size range.

Future work on this project will consist of the further development of the item and the additional head size.

The purpose of this interim test report is to discuss the practicality of this molding concept for Navy cap covers and possibly other Naval clothing and accessories of similar design.

DISCUSSION

Initial distributions of the experimental item were made to 60 test participants; responses were received from 44. The molded cover issued was a size 7 to fit the standard male's service combination cap frame. The test participants had eight head sizes ranging from 6 1/2 through 7 1/2, with the exception of size 6 5/8. Test items were distributed to seven Naval activities with varying temperatures. These activities were located in San Diego and Long Beach, California; Puget Sound and Bremerton, Washington; Orlando, Florida; Corpus Christi, Texas; Washington, D.C.; and Boston, Massachusetts. Test participants were Commissioned Officers Ensign through Captain, Petty Officers and Chief Petty Officers.

Test subjects indicated that the combination service cap frame with cover was worn about four hours per day, in all types of weather and at different temperatures.

From the test data, it appears that the participants in general regarded the design and appearance of the test item as highly satisfactory (see Appendix A). As for fit, 84% indicated that the molded cover was satisfactory, but test participants with small head sizes, such as 6 1/2 and 6 3/4, found the cover to be slightly too large around the inner band circumference of the combination service cap frame for good military appearance. The molded cover weight was found to be slightly heavier than the standard, but through further experimentation by NCTRF, this problem area can be minimized.

CONCLUSION

NCTRF conducted a field study showing that a slush-molded, stretchable, one-size, plastic white cap cover can accommodate most Navy men who wear the service combination cap frame. The use of this cap cover would reduce the maintenance and purchase costs. The study also noted that the molded cover was heavier than the standard.

Future work will focus on developing an additional head size and reducing the weight of the cap cover.

Appendix A. Test Results (In %)

1. Indicate fit of experimental cover to your service cap frame:

| <u>Too small</u> | <u>Just right</u> | <u>A little large</u> | <u>Too large</u> |
|------------------|-------------------|-----------------------|------------------|
| 8.0 | 57.0 | 27.0 | 8.0 |

2. Indicate initial impression (appearance) of the experimental item:

| | <u>Superior</u> | <u>Excellent</u> | <u>About the Same</u> | <u>Fair</u> | <u>Poor</u> |
|---------|-----------------|------------------|-----------------------|-------------|-------------|
| Color | 15.0 | 63.0 | 22.0 | -- | -- |
| Luster | 13.0 | 53.0 | 34.0 | -- | -- |
| Texture | 8.0 | 45.0 | 23.0 | 18.0 | 6.0 |

3. Indicate duration of wear for service cap per day:

| <u>Less than 1 Hr.</u> | <u>1-2 Hrs.</u> | <u>2-4 Hrs.</u> | <u>4-8 Hrs.</u> | <u>Over 8 Hrs.</u> |
|------------------------|-----------------|-----------------|-----------------|--------------------|
| 28.0 | 38.0 | 30.0 | 4.0 | - |

4. Was the design of the experimental item:

| <u>Highly satisfactory</u> | <u>Moderately satisfactory</u> | <u>Average</u> | <u>Fair</u> | <u>Poor</u> |
|----------------------------|--------------------------------|----------------|-------------|-------------|
| 27.0 | 45.0 | 8.0 | 20.0 | -- |

5. Comparing the weight of your present cover with the test cover is it:

| <u>Too heavy</u> | <u>Heavier</u> | <u>The same</u> | <u>Lighter</u> | <u>Too light</u> |
|------------------|----------------|-----------------|----------------|------------------|
| 36.0 | 54.0 | 10.0 | -- | -- |

- 5A. Compare the test cap cover to your cotton cap cover (Put N/A if you don't own a cotton cover):

| | <u>Superior</u> | <u>Excellent</u> | <u>The same</u> | <u>Fair</u> | <u>Poor</u> |
|---------|-----------------|------------------|-----------------|-------------|-------------|
| Color | 24.0 | 40.0 | 24.0 | 12.0 | -- |
| Luster | 26.0 | 51.0 | 13.0 | 4.0 | 6.0 |
| Texture | 6.0 | 26.0 | 50.0 | 9.0 | 9.0 |

5B. Compare the test cap cover to your plastic cap cover:

| | <u>Superior</u> | <u>Excellent</u> | <u>The same</u> | <u>Fair</u> | <u>Poor</u> |
|---------|-----------------|------------------|-----------------|-------------|-------------|
| Color | 33.0 | 29.0 | 33.0 | 5.0 | -- |
| Luster | 33.0 | 25.0 | 33.0 | 5.0 | 4.0 |
| Texture | 3.0 | 21.0 | 54.0 | 13.0 | 9.0 |

5C. List any comments you like about the test cap cover:

Easy to clean, waterproof, doesn't yellow too readily,

appears white all the time.